

Application No. 10/824,467
Response dated: January 11, 2007
Reply to OA of: August 11, 2006

REMARKS

Applicants have amended the claims to more particularly define the invention taking into consideration the outstanding Official Action. Claim 1 has been amended to clarify the objected to phrase in the Official Action of "weighing the sheets to a hot-press mold" to avoid any confusion and provide proper antecedent basis in the claim. The amendment to claim 1 is clearly supported by Applicants specification as originally filed, note especially page 4, line 16-20. Claim 5 has been also amended to clarify that the sheets are conveyed and not cutting the sheets at this stage in the process. Applicants most respectfully submit that all of the claims now present in the application are in full compliance with 35 U.S.C. 112 and are clearly patentable over the references of record.

The present invention is to provide a method of manufacturing a foam from a thermoplastic elastomeric material. The method comprises the steps of using thermoplastic elastomer as a raw material, adding foaming agent, cross-linking agent and other additives into the raw material, kneading and rolling these material for forming a continuous sheet by means of conventional devices. Then cutting the continuous sheet with fixed size, finally, conveying these sheet to a hot-press mold for foaming. By utilizing the present invention, the advantages of using the conventional EVA based chemical cross-linking process and device to manufacture a foam is achieved. Also by using thermoplastic elastomer, having good elasticity and slip resistant as a typical rubber foam material and the properties of a simple recipe, easy coloring, easy post-processing and recycling as a typical plastic foam material is achieved. Please note that, since this invention uses thermoplastic elastomer as a primary raw material, but not EVA (ethylene vinyl acetate), the details of the manufacturing process and additives used in this application should be different from those in the conventional EVA based manufacturing process.

Applicants believe that the required clarification has now been met by the amendments to the claims and the above discussion. Accordingly, it is most

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respectfully requested that the rejection of claims 1-17 under 35 USC 112 be withdrawn.

The rejection of claims 1-17 under 35 U.S.C. 103(a) as being unpatentable over Yang in view of Cheskin has been carefully considered but is most respectfully traversed in view of the amendment to the claims and the following comments.

Applicants wish to direct the Examiner's attention to the basic requirements of a prima facie case of obviousness as set forth in the MPEP § 2143. This section states that to establish a prima facie case of obviousness, three basic criteria first must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Section 2143.03 states that all claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Applicants also most respectfully direct the Examiner's attention to MPEP § 2144.08 (page 2100-114) wherein it is stated that Office personnel should consider all rebuttal argument and evidence presented by applicant and the citation of In re Soni for error in not considering evidence presented in the specification.

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Applicants most respectfully submit that Yang discloses a process for producing an ethylene vinyl acetate insole which involves weighing molding compounds for manufacturing the ethylene vinyl acetate insole. The molding compounds for manufacturing the EVA insole include EVA resin pellets, fillers, blowing agents and cross-linking agents, and are mixed and rolled by means of a roller so as to form a sheet material 10 as shown in FIG. 1 of US Patent No. 6,129,798. Again referring to FIG. 1, the sheet material 10 is cut into a plurality of elongated strips 20. A predetermined amount of the strips 20 are placed into a first mold unit 30, which is heated and pressurized so as to form a partially foamed insole 40. The partially foamed insole 40 is placed into a second mold unit 50, which is heated, pressurized, and cooled so as to form a completely foamed insole 60. The completely foamed insole 60 is then trimmed to form a finished ethylene vinyl acetate insole 70.

Cheskin discloses a lightweight, flexible, resilient sole 10 adapted for athletic footwear, as shown in FIG. 1 of US Patent No. 4,676,010, which includes a relatively soft midsole 11 made of a synthetic such as ethylene vinyl acetate, the midsole 11 being wedge-shaped and including a relatively thick heel section and a relatively thin and flexible forepart section, and a plurality of discontinuous independent outsole pieces 12, 13, 14 made of a relatively hard and wear-resistant synthetic rubber, such as styrene-butadiene rubber, the outsole pieces 12, 13, 14 being disposed across the forepart section of the midsole 11 with open spaces between the outsole pieces 12, 13, 14 to maintain the flexibility of the forepart section, with the outsole pieces 12, 13, 14 being vulcanized to the lower surface 17 of the midsole 11 to form a composite sole.

After comparing the presently claimed invention with the cited references in detail, it is apparent that the present invention is capable of using conventional EVA based chemical cross-linking process and device to manufacture a foam from a thermoplastic elastomer having good elasticity and slip resistant as a typical rubber foam material, and the properties of simple recipe, easy coloring, easy post-processing and recycling as a typical plastic foam material. Therefore, the invention claimed in the

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present application is totally different and not suggested from those disclosed in the citations based on the following reasons:

a) The primary raw materials are different: The present application uses TPE (thermoplastic elastomer) as a primary raw material, however, the cited references use EVA (ethylene vinyl acetate) or synthetic rubber as a primary raw material. The TPE (thermoplastic elastomer) not only has some physical crosslinks not existing in EVA (ethylene vinyl acetate) or synthetic rubber, but also has an outer appearance and molecular structure different from EVA (ethylene vinyl acetate) or synthetic rubber;

b) The recipes are different: The present application is aimed at the composition of the materials added in the process, the final physical properties of the foam being manufactured are derived from and controlled by the composition of the thermoplastic elastomer and other polymeric materials. Therefore, the compatibility between the thermoplastic elastomer and the polymeric materials should be seriously considered and selected. It is far more difficult than manufacturing foam by using conventional EVA (ethylene vinyl acetate) or synthetic rubber, since the final physical properties of the foam manufactured by conventional EVA (ethylene vinyl acetate) or synthetic rubber are derived from and controlled by the additives of carbon black and silica;

c) The cross-linking agents are different: Since TPE (thermoplastic elastomer) itself has some physical crosslinks, the cross-linking agent (such as dicumyl peroxide) added in the process only has a percentage within 0.05% to 0.5% of the total weight of the TPE (thermoplastic elastomer), which is a very small amount than the cross-linking agent added to the conventional EVA (ethylene vinyl acetate) or synthetic rubber in the conventional EVA based manufacturing process;

d) The manufacturing difficulties are different: Though the conventional EVA based chemical cross-linking process and device for manufacturing a foam are very mature nowadays. However, since it only needs to add a very small amount of the cross-linking agent during the manufacturing process of the present application, how to control the speed and period for uniformly mixing the raw material and additives

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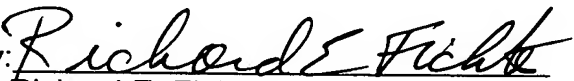
becomes a crucial issue in the present application, which is far more difficult to be handled than in the conventional EVA based manufacturing process;

e) The advantages are different: Since, in the process of the conventional EVA based manufacturing process, it is necessary to use large amount of additives of carbon black, white smoke and other accelerator, etc., which are the source of dust pollution in the factory and will cause serious health damages to the operators working there. On the contrary, the recipes used in the manufacturing process of the present application are very simple, which effectively reduce the source of dust pollution and the damages concerned; and,

f) The properties of products are different: The products manufactured by using this application not only have the advantages of good elasticity and slip resistant as a typical rubber foam material, but also have the advantages of easy coloring, easy post-processing, and recycling as a typical plastic foam material. All these properties are not existing in the products manufactured by using conventional EVA (ethylene vinyl acetate) or synthetic rubber through the conventional EVA based chemical cross-linking process. Accordingly, it is most respectfully requested that this rejection be withdrawn.

In view of the above comments and further amendments to the claims, favorable reconsideration and allowance of all the claims now present in the application are most respectfully requested.

Respectfully submitted,
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